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ABSTRACT

Mathematics 30 is a 12th-grade mathematics course for students in Alberta, Canada. This document is the alternate form for the final test for the course. Intended for administration during January 1989, it contains 45 multiple-choice questions, seven open-ended scannable questions, and three written-response questions. Two and one-half hours are allowed for completing the test. No answer key is included since scoring is done by the provincial education department. Formula sheets and work sheets are included. (YP)

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GRADE 12 DIPLOMA EXAMINATION

Mathematics 30

January 1989
Form B

Alberta
EDUCATION

SE 030 506

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GRADE 12 DIPLOMA EXAMINATION
MATHEMATICS 30

DESCRIPTION

Time: 2½ hours

Total possible marks: 65

This is a **CLOSED-BOOK** examination consisting of three parts:

PART A: 45 multiple-choice questions each with a value of 1 mark.

PART B: Seven open-ended scannable questions each with a value of 1 mark.

PART C: Three written-response questions for a total of 13 marks.

GENERAL INSTRUCTIONS

All numbers used in this examination are to be considered as EXACT numbers and are not the result of a measurement.

A tear-out formula and z-score sheet is included in the booklet.

All students are expected to provide their own approved scientific calculator.

> NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

DO NOT FOLD EITHER THE ANSWER SHEET OR THE EXAMINATION BOOKLET

The presiding examiner will collect the answer sheet and examination booklet for transmission to Alberta Education.

JANUARY 1989
FORM B

PART A

INSTRUCTIONS

There are 45 multiple-choice questions with a value of one mark each in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement. Use the separate answer sheet provided and follow the specific instructions given.

Read each question carefully and decide which of the choices BEST completes the statement or answers the question. Locate that question number on the answer sheet and fill in the space that corresponds to your choice. USE AN HB PENCIL ONLY.

Example

This examination is for the subject area of

A. Biology
B. Physics
C. Chemistry
D. Mathematics

Answer Sheet

A	B	C	D
①	②	③	●

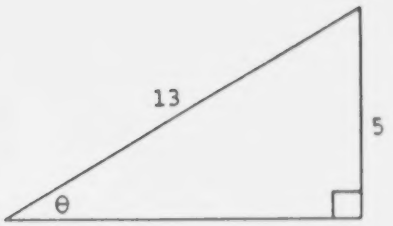
If you wish to change an answer, please erase your first mark completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

WHEN YOU HAVE COMPLETED PART A, PROCEED DIRECTLY TO PART B

DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE PRESIDING EXAMINER

1. In the triangle shown at the right, sec θ is equal to



A. $\frac{13}{5}$

B. $\frac{13}{12}$

C. $\frac{12}{13}$

D. $\frac{5}{13}$

2. In ΔABC, if $\angle A = 50°$ and $\angle B = 30°$, then sin C is

A. 0.1736
B. 0.5000
C. 0.7660
D. 0.9848

3. The expression $1 + \tan^2 \theta$ in terms of $\sin \theta$ is

A. $\frac{1}{1 - \sin^2 \theta}$

B. $\frac{\sin^2 \theta - 1}{\sin^2 \theta}$

C. $\frac{1}{\sin^2 \theta}$

D. $2 \sin^2 \theta$

4. If $2 \cos^2 \theta - 3 \cos \theta + 1 = 0$, $0 \leq \theta < 2\pi$, then all possible values of θ are

A. $\pi, \frac{\pi}{3}, \frac{5\pi}{3}$

B. $0, \frac{\pi}{6}, \frac{11\pi}{6}$

C. $0, \frac{2\pi}{3}, \frac{4\pi}{3}$

D. $0, \frac{\pi}{3}, \frac{5\pi}{3}$

5. The expression $\cos\left(\frac{\pi}{12}\right)$ equals

A. cos 15°

B. sin 15°

C. cos 30°

D. sin 30°

6. If csc 72° = h, then sin 288° equals

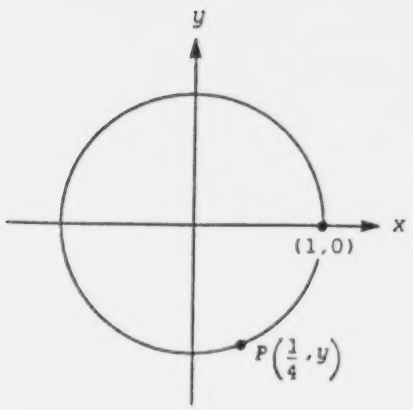
A. h

B. $\frac{1}{h}$

C. $-h$

D. $-\frac{1}{h}$

7. In the unit circle shown at the right, the value of y at the point P is



A. $-\frac{\sqrt{17}}{4}$

B. $-\frac{\sqrt{15}}{4}$

C. $-\frac{\sqrt{3}}{4}$

D. $-\frac{\sqrt{3}}{2}$

8. The period of the function $y = 2\sin(3\theta)$ is

A. $\frac{\pi}{3}$

B. $\frac{2\pi}{3}$

C. 2π

D. 3π

9. If $\tan \theta = -\frac{15}{8}$, then the expression $\frac{\cos^2 \theta - \sin^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ equals

A. $\frac{289}{161}$

B. $\frac{161}{289}$

C. $-\frac{161}{289}$

D. $-\frac{289}{161}$

10. The expression $\frac{\sec \theta \sin \theta}{\csc \theta \cos \theta}$ is equivalent to

A. $\tan^2 \theta$

B. $\cot^2 \theta$

C. $\sin \theta \cos \theta$

D. $\sin^2 \theta \cos^2 \theta$

11. If the sides of a triangle are 6 cm, 7 cm, and 9 cm, then in this triangle the measure of the smallest angle, correct to the nearest degree, is

A. $34°$

B. $39°$

C. $42°$

D. $59°$

12. An asymptote to the graph of the hyperbola $x^2 - 3y^2 = 9$ is

A. $y = \sqrt{3}x$

B. $y = \frac{\sqrt{3}}{3}x$

C. $y = 3x$

D. $y = -3x$

13. From a point on the ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$, the sum of the distances to the foci is

A. 6
B. 8
C. 9
D. 16

14. A circle passes through points (1, -4) and (5, 2) and its centre is on the line $x - 2y + 9 = 0$. The equation of this circle is

A. $(x - 3)^2 + (y + 1)^2 = 13$

B. $(x - 1)^2 + (y + 4)^2 = 52$

C. $(x + 3)^2 + (y - 3)^2 = 65$

D. $(x + 5)^2 + (y - 2)^2 = 72$

15. The line $3x - 4y + 5 = 0$ has a slope of

A. $-\frac{4}{3}$

B. $-\frac{3}{4}$

C. $\frac{3}{4}$

D. $\frac{4}{3}$

16. The vertices of the graph defined by $x^2 + 3y^2 = 9$ are at

A. (3, 0), (-3, 0)

B. $(\pm 3, 0), (0, \pm 3)$

C. $(0, -\sqrt{3}), (0, \sqrt{3})$

D. $(\sqrt{6}, 0), (-\sqrt{6}, 0)$

17. The graph of $ax^2 + by^2 + cx + dy = 0$ could be a parabola if

A. $a = b = 0$
B. $a = c = 0$
C. $b = d = 0$
D. $b = c = 0$

18. The hyperbola defined by $49y^2 - 9x^2 = 441$ has its foci at

A. $(\pm 2\sqrt{10}, 0)$

B. $(0, \pm 2\sqrt{10})$

C. $(\pm\sqrt{58}, 0)$

D. $(0, \pm\sqrt{58})$

19. If $(x - h)^2 + (y - k)^2 = r^2$ is expressed in the form $x^2 + y^2 + Dx + Ey + F = 0$, then the value of F is

A. $h^2 + k^2 + r^2$

B. $h^2 + k^2 - r^2$

C. $r^2 - h^2 - k^2$

D. $-r^2 - h^2 - k^2$

20. A hyperbola with its centre at the origin has one focus at (-5, 0) and one vertex at (3, 0). The equation of this hyperbola is

A. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

B. $\frac{x^2}{25} - \frac{y^2}{9} = 1$

C. $\frac{y^2}{9} - \frac{x^2}{25} = 1$

D. $\frac{y^2}{25} - \frac{x^2}{16} = 1$

21. The equation of the parabola with its vertex at (3, 0) and focus at (6, 0) is

A. $x^2 = -12y + 36$

B. $x^2 = 12y - 36$

C. $y^2 = -12x + 36$

D. $y^2 = 12x - 36$

22. For the parabola $(x - 2)^2 = 8(y - 7)$, the equation of the axis of symmetry is

A. $x = 2$
B. $x = 4$
C. $y = 5$
D. $y = 7$

23. Two points (10, 0) and (0, 6) are on an ellipse that is centred at the origin. One focus of the ellipse is

A. (-10, 0)
B. (0, 8)
C. (8, 0)
D. (0, -6)

24. The sum of the geometric series $5 + 15 + 45 + \ldots + 10\,935$ is

A. 16 390
B. 16 400
C. 43 760
D. 49 205

25. For the series $\sum_{n=1}^{12} \left(\frac{5 - 2n}{3}\right)$, the common difference is

A. 3

B. $\frac{5}{3}$

C. $-\frac{2}{3}$

D. -2

26. The sum of the first four terms of an arithmetic series is -20 and the third term is 5. The common difference, correct to the nearest tenth, is

A. 7.5
B. 10.0
C. 15.0
D. 20.0

27. The value of $\sum_{k=1}^{20} (3k - 4)$ is

A. 53
B. 56
C. 550
D. 626

28. The sum of the infinite geometric series $8 + \frac{20}{3} + \frac{50}{9} + \ldots$ is

A. 48

B. 40

C. $\frac{8}{5}$

D. $\frac{4}{3}$

29. The first term of a geometric series is 160 and the common ratio is $\frac{3}{2}$. If the sum of the series is 2110, the number of terms is

A. 4
B. 5
C. 6
D. 7

30. The mean height of a group of students is 160 cm with a standard deviation of 25 cm. A z-score of 1.2 would correspond to a height of

A. 130 cm
B. 185 cm
C. 190 cm
D. 192 cm

31. For a certain location, a weather survey for a year revealed the data at the right. If a day is chosen at random from that year, the probability that it was a windy day, correct to the nearest hundredth, is

A. 0.05
B. 0.30
C. 0.42
D. 0.50

Type of Weather	No. of Days
Hot and calm	43
Hot and windy	17
Mild and calm	113
Mild and windy	110
Cold and calm	54
Cold and windy	28

32. Two measures of dispersion are the

A. range and mode
B. mode and median
C. standard deviation and mode
D. range and standard deviation

33. For a given normal distribution, the mean is 24 and the standard deviation is 4. If the probability that a score lies between A and B is 0.9270 and B is 30, then A is

A. 11
B. 12
C. 13
D. 14

34. A hat contains 22 identical slips of paper that have been numbered consecutively from 4 to 25. If one slip of paper is drawn at random, the probability that the number on that slip is even OR a multiple of 3 is

A. $\frac{2}{11}$

B. $\frac{7}{22}$

C. $\frac{11}{22}$

D. $\frac{7}{11}$

35. For tractors of a certain make, the operating times before an overhaul is required are normally distributed with a mean of 2000 h and a standard deviation of 500 h. Correct to the nearest tenth, the percentage of such tractors that will operate between 1500 h and 3000 h before an overhaul is required is

A. 36.4%
B. 63.6%
C. 81.9%
D. 86.4%

36. The marks from a recent examination were normally distributed with a mean of 62% and a standard deviation of 8%. If 33 students scored between 74% and 78%, then the number of students who wrote the examination was

A. 750
B. 730
C. 710
D. 700

37. A manufacturer has determined that the "lives" of his toasters are normally distributed with a mean of 7 a. If the standard deviation is 2 a, then the probability that one of these toasters will last longer than 8 a is

A. 0.0958
B. 0.1915
C. 0.3085
D. 0.6915

38. The present value of a coin in a collection is \$300. The value V increases according to the formula $V = 300(1.09)^n$, where n is the number of years. Correct to the nearest tenth of a year, how long will it take for the coin to double in value?

A. 11.1 a
B. 8.0 a
C. 2.2 a
D. 1.1 a

39. If $\log_3(x + 3) - 2 = \log_3(x - 1)$, then $4x$ equals

A. 2
B. 4
C. 6
D. 8

40. The expression $\dfrac{\left(\frac{27}{64}\right)^{\frac{2}{3}}}{125^{\frac{1}{3}}}$ is equal to

A. $\frac{9}{400}$

B. $\frac{9}{80}$

C. $\frac{3}{20}$

D. $\frac{45}{16}$

41. A logarithmic expression equivalent to $a^r = s$ is

A. $\log_a(s) = r$

B. $\log_a(r) = s$

C. $\log_r(s) = a$

D. $\log_s(r) = a$

42. A half-life is the time required for a given mass of radioactive material to decay to half its original mass. If the half-life of an element is 30 s, how much of a 520 g sample, correct to the nearest gram, will remain after 4 min?

A. 65 g
B. 17 g
C. 4 g
D. 2 g

43. If $\log_5(125) = 6x^2 - x + 2$, then the values of x are

A. $\frac{1}{2}, -\frac{1}{3}$

B. $-\frac{1}{2}, \frac{1}{3}$

C. $-\frac{1}{6}, 1$

D. $\frac{1}{6}, -1$

44. If $2x^3 - 3x^2 - 23x + 12$ is divisible by $x + c$, then one value of c is

A. -3
B. -1
C. 1
D. 3

45. In the synthetic division shown at the right, the value of e is

-2	2	0	1	3
		b	d	f
	a	c	e	g

A. 9
B. 4
C. -4
D. -7

YOU HAVE NOW COMPLETED THE MULTIPLE-CHOICE SECTION OF THE EXAMINATION. PLEASE PROCEED TO PART B AND ANSWER THE OPEN-ENDED SCANNABLE QUESTIONS.

PART B

INSTRUCTIONS

There are seven open-ended scannable questions with a value of one mark each in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement.

Read each question carefully.

Solve each question and write your answer to the nearest tenth.

Record your answer on the answer sheet by writing it in the boxes of the corresponding answer field and by filling in one circle in EVERY column as illustrated.

Sample Questions and Solutions

1) If θ is acute and $\sin \theta = 0.6735$, then the measure of θ correct to the nearest tenth of a degree is _____ .

$\theta = 42.33777464...$

RECORD 042.3

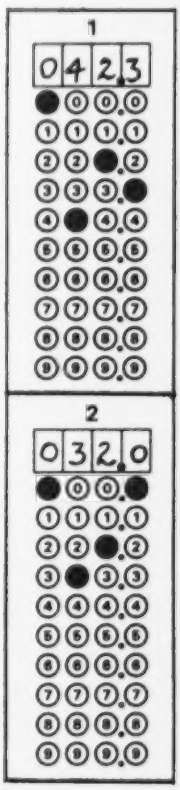
2) For the arithmetic series $-8 + (-5) + (-2) + \ldots + (85)$, the number of terms correct to the nearest tenth is _____ .

$85 = -8 + (n - 1)(3)$

$93 = 3n - 3$

$n = 32$

RECORD 032.0



If you wish to change an answer, please erase your first answer completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

WHEN YOU HAVE COMPLETED PART B, PLEASE PROCEED DIRECTLY TO PART C.

1. In ΔABC, $\angle A = 120°$, $b = 4$ cm, and $c = 5$ cm. The length of the third side of the triangle correct to the nearest tenth of a centimetre is _____ __.

2. An ellipse has vertices at $(0, \pm 6)$ and foci at $(0, \pm 4)$. If the equation of the ellipse is written in the form $9x^2 + 5y^2 = k$, then the value of k correct to the nearest tenth is _____.

3. If $x^2 + y^2 - 8x + 10y - k = 0$ is a circle with radius 7, then the value of k correct to the nearest tenth is _____.

4. In the geometric sequence 625, 500, 400, ..., the value of the 10th term correct to the nearest tenth is _____.

5. A restaurant serves its customers in a mean time of 15 min with a standard deviation of 4 min. Assuming a normal distribution, the percentage of customers, correct to the nearest tenth, who wait less than 8 min for their meal is _____.

RECORD THE ANSWER ON THE ANSWER SHEET

6. If $\log_3(19) = x$, then the value of x correct to the nearest tenth is _____.

RECORD THE ANSWER ON THE ANSWER SHEET

7. If $P(x) = (x^3 - 3)^2 + (x^2 + 1)^3$, then the degree of $P(x)$ correct to the nearest tenth is _____.

RECORD THE ANSWER ON THE ANSWER SHEET

YOU HAVE NOW COMPLETED THE OPEN-ENDED SCANNABLE SECTION OF THE EXAMINATION. PLEASE PROCEED TO PART C AND ANSWER THE WRITTEN-RESPONSE QUESTIONS.

PART C

INSTRUCTIONS

There are three written-response questions for a total of 13 marks in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement.

Please write your answers in the examination booklet as neatly as possible.

Show all pertinent calculations and formulas.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

START PART C IMMEDIATELY

FOR DEPARTMENT USE ONLY

(4 marks)

1. A helicopter pilot wishes to fly from town A to town B. The distance from A to a third town C is 420 km, $\angle BAC = 64°$, and $\angle ACB = 54°$.

   a) Find, correct to the nearest tenth of a kilometre, the distance from A to B.

The distance from A to B is _____

   b) Find, correct to the nearest tenth of an hour, the flying time from A to B if the helicopter speed is 180 km/h.

The flying time from A to B is _____

20

FOR DEPARTMENT USE ONLY

2. For the arithmetic series $60 + 56 + 52 + \ldots$, find: (5 marks)

a) the number of terms if the last term is -36

The number of terms is _____

b) the number of terms if the sum of the series is -720

The number of terms is _____

FOR DEPARTMENT USE ONLY

(4 marks)

3. The graph of a third-degree polynomial function touches the x-axis at (1, 0) and crosses the x-axis at (-2, 0). Express in factored form:

a) an equation of such a polynomial function

The equation is _____

b) the equation of the polynomial function if the y-intercept of its graph is -6

The equation is _____

c) the equation of the polynomial function if its graph passes through (2, 8)

The equation is _____

YOU HAVE NOW COMPLETED THE EXAMINATION. IF YOU HAVE TIME, YOU MAY WISH TO GO BACK AND CHECK YOUR ANSWERS

TEAR-OUT SHEET

FOLD AND TEAR ALONG PERFORATION

MATHEMATICS 30
FORMULA SHEET

I. Trigonometry

1. $\pi = 3.14159$
2. $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
3. $a^2 = b^2 + c^2 - 2bc \cos A$
4. $\sin^2 A + \cos^2 A = 1$
5. $1 + \tan^2 A = \sec^2 A$
6. $1 + \cot^2 A = \csc^2 A$
7. $\sin\left(\dfrac{\pi}{2} - \theta\right) = \cos\theta$
8. $\cos\left(\dfrac{\pi}{2} - \theta\right) = \sin\theta$
9. $\sin(A + B) = \sin A \cos B + \cos A \sin B$
10. $\sin(A - B) = \sin A \cos B - \cos A \sin B$
11. $\cos(A + B) = \cos A \cos B - \sin A \sin B$
12. $\cos(A - B) = \cos A \cos B + \sin A \sin B$
13. $\sin(-\theta) = -\sin\theta$
14. $\cos(-\theta) = \cos\theta$
15. $\tan(-\theta) = -\tan\theta$

II. Quadratic Relations

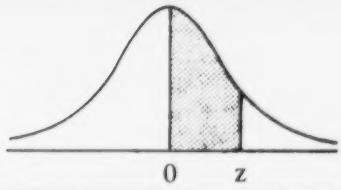
1. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. $d = \dfrac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$
3. $M\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$
4. $(x - h)^2 + (y - k)^2 = r^2$
5. $x^2 + y^2 + Dx + Ey + F = 0$
6. $(y - k)^2 = 4p(x - h)$
7. $(x - h)^2 = 4p(y - k)$
8. $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1,\ a^2 = b^2 + c^2$
9. $\dfrac{y^2}{a^2} + \dfrac{x^2}{b^2} = 1,\ a^2 = b^2 + c^2$
10. $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1,\ c^2 = a^2 + b^2$
11. $\dfrac{y^2}{a^2} - \dfrac{x^2}{b^2} = 1,\ c^2 = a^2 + b^2$

III. Sequences, Series, and Limits

1. $t_n = a + (n - 1)d$
2. $S_n = \dfrac{n(a + t_n)}{2}$
3. $S_n = \dfrac{n[2a + (n - 1)d]}{2}$
4. $A = P(1 + i)^n$
5. $t_n = ar^{n-1}$
6. $S_n = \dfrac{a(r^n - 1)}{r - 1}$
7. $S_n = \dfrac{rt_n - a}{r - 1}$
8. $S = \dfrac{a}{1 - r},\ -1 < r < 1$

IV. Statistics

1. $\mu = \dfrac{x_1 + x_2 + \ldots + x_n}{n}$
2. $\sigma = \sqrt{\dfrac{(x_1 - \mu)^2 + \ldots + (x_n - \mu)^2}{n}}$
3. $z = \dfrac{x - \mu}{\sigma}$



AREAS UNDER THE STANDARD NORMAL CURVE

z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

FOLD AND TEAR ALONG PERFORATION

TEAR-OUT SHEET

(NO MARKS WILL BE GIVEN FOR WORK DONE ON THIS PAGE)

FOLD AND TEAR ALONG PERFORATION

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M1 M2 M3 M4

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MATHEMATICS 30

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